Appendix B

Tables

Table 2.1: Records Review – Potential Wildlife Species of Conservation Concern

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation
Tuberous Indian Plantain	*Arnoglossum plantagineum*	S3	Special Concern	Special Concern	NHIC	Found in wet, sandy areas along river banks and wetlands. Restricted to limited occurrences within five shoreline areas of Lake Huron (GRCA, 2004). Not reported as occurring in the Living Springs, North Cumnock or Speed-Lutteral-Swan Creek PSW complexes (Ecologistics 1988; Ecologistics 1989; MNR 1987)	Field investigations did not detect the presence of Tuberous Indian Plantain in or within 120m of the Project Location. **Considered absent from the Project Location.**
Hill's Pondweed	*Potamogeton hillii*	S2	Special Concern	Special Concern	Historic records from Wellington County (MNR, pers. comm. 2010)	Occurs in cold, clear, slow moving streams, ditches and pond with muddy substrates. It is typically found in calcareous areas with dolomite limestone (COSEWIC 2005).	Field investigations did not detect the presence of Hill's Pondweed in or within 120m of the Project Location. Wetland habitat within the Study Area consisted of ponds, swamps or drainage features. Suitable streams for Hill's Pondweed were not present in or within 120m of the Project Location. **Considered absent from the Project Location.**
Snapping Turtle	*Chelydra serpentina*	S3	Special Concern	Special Concern	Historic records from Wellington County (MNR, pers. comm. 2010)	Occurs in a variety of wetlands with standing water, often preferring habitat with dense vegetation. The Snapping Turtle usually occurs in large wetland or bodies of water, but can sometimes be encountered in small ponds or creeks. Nesting occurs in loose soils in the proximity of wetlands.	Site investigations indicate that features containing the required habitat components for Snapping Turtle are predominately absent from the Project Location and 120m Zone of Investigation. Feature 2 (a unit of the Living Springs PSW) contained a small (0.4 ha) thicket swamp community; it contained slow-moving water with a soft mud bottom and dense

Table 2.1: Records Review – Potential Wildlife Species of Conservation Concern

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation
							aquatic vegetation. The remainder of the feature is comprised of cultural and deciduous woodland. Adjacent land use was actively cultivated agricultural lands. Snapping Turtle was not observed in the Living Springs PSW complex during field investigations completed by Ecologistics (1988) and no snapping turtles were observed during Stantec site investigations of this feature. **Considered absent from the Project Location.**
Eastern Ribbonsnake	*Thamnophis sauritus*	S3	Special Concern	Special Concern	NHIC	Semi-aquatic and will utilize a variety of habitats, but rarely ventures far from streams, ponds, bogs, or swamps (Conant and Collins, 1998). This species may hibernate in mammal burrows, ant mounds, underground and occasionally underwater. (COSEWIC 2002).	In Wellington County, records of ribbonsnake are predominately from the southern end of County (Oldham and Weller, 2000). Field investigations identified a small pocket of shallow water with low dense vegetation in the willow thicket swamp contained within Feature 2. The thicket is a small wetland pocket which considered too small to support ribbonsnake. Field investigations did not detect the presence of the snake, or potential hibernacula within 120 m of the Project Location. **Considered absent from the Project Location.**
Eastern Milksnake	*Lampropeltis triangulum*	S3	Special Concern	Special Concern	NHIC	In Ontario, Eastern Milksnake is more common in heavily forested areas (COSEWIC, 2002b). Utilize a variety of habitats,	Most records in Wellington County occur in the south and southwest portions of the County, in proximity to the escarpment where forest cover is higher Oldham and Weller

Table 2.1: Records Review – Potential Wildlife Species of Conservation Concern

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation
						including fields, woodlands, rocky hillsides, and valley bottoms (Conant and Collins, 1998). This species is known to utilize human-made structures for hibernation and hiding, and also hibernates underground or in rock crevices. The milksnake lays eggs in abandoned mammal burrows or rotting logs, or sand.	(2000). Field investigations did not detect the presence of the snake, potential hibernacula or oviposition sites within 120 m of the Project Location. **Considered absent from the Project Location.**
Bald Eagle	*Heliaeetus leucocephalus*	S1S2N, S4B	Special Concern	Not at Risk	Historic records from Wellington County (MNR, pers. comm. 2010)	The Bald Eagle almost always nests near water, usually on large lakes. Large stick nests are typically placed in trees located within mature woodlots. They usually require 250 ha of mature forest (Sandilands 2005). Known to nest at Luther Marsh, north of the Study Area.	No Bald Eagle nests were observed during field investigations. The Project Location does not provide the mature woodland required for Bald Eagle and is not located on a large lake. **Considered absent from the Project Location.**
Black Tern	*Chlidonias niger*	S3B	Special Concern	Not at Risk	Historic records from Wellington County (MNR, pers. comm. 2010)	Nests semi-colonially in freshwater marshes with emergent vegetation. This species prefers marshes or marsh complexes of more than 20 ha in size for breeding (Dunn and Agro, 1995).	No marshes of suitable size present within 120 m of the Project Location. **Considered absent from the Project Location.**
Common Nighthawk	*Chordeiles minor*	S4B	Special Concern	Threatened	Historic records from Wellington County (MNR, pers. comm. 2010)	In rural areas of southern Ontario the species nests in grasslands, pastures, agricultural fields, gravel pits, prairies, alvars and at airports (Sandilands, 2010). Survey	Presence of Nighthawk is not known from the Study Area. Habitat within 120m of the Project Location is comprised of actively managed agricultural lands subject to regular disturbance.

Table 2.1: Records Review – Potential Wildlife Species of Conservation Concern

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation
						efforts conducted during 1981-1985 and 2001-2005 for the Ontario Breeding Bird Atlas indicate the species is absent from the 10x10km square containing the Project Location (Cadman et al, 1987; Cadman et al., 2007).	The Project Location does not contain habitat that could be considered candidate significant wildlife habitat for Common Nighthawk. **Considered absent from the Projec Location.**
Short-eared Owl	*Asio flammeus*	S2N, S4B	Special Concern	Special Concern	Historic records from Wellington County (MNR, pers. comm. 2010) Ecologistics, 1988, 1989	Short-eared Owls breed in open country, including large expanses of prairie and coastal grasslands, heathlands, shrub-steppe, and tundra but also in agricultural areas (Wiggins et al., 2006). In Ontario, Short-eared Owls typically breed in cattail and sedge marshes, adjacent fields, pasture, old fields, heath bogs and tundra (Cadman, 1994). The species is area sensitive, requiring a minimum amount of suitable grassland habitat for breeding. In Ontario, 75 to 100 ha of suitable habitat is thought to be necessary for breeding (Sandilands, 2010). Short-eared Owls also tend to nest away from development, with a minimum distance of 250 m from buildings (Combs-Beattie, 1993). Survey efforts conducted during 1981-1985 and 2001-2005 for the Ontario Breeding Bird Atlas indicate the species is absent	Field investigations indicate that the Study Area is predominately actively cultivated agricultural fields (Figure 3). No grassland of sufficient size to support Short-eared Owl was present within 120 m of the Project Location. No Short-eared Owls were observed during the site investigation program. **Considered absent from the Project Location.**

Table 2.1: Records Review – Potential Wildlife Species of Conservation Concern

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation
						from the 10x10km square containing the Project Location (Cadman et al, 1987; Cadman et al., 2007).	
Yellow-breasted Chat	*Icteria virens*	S2B	Special Concern	Special Concern	Historic records from Wellington County (MNR, pers. comm. 2010)	It is not widespread in Ontario, and most records from the province are from the Carolinian region (Eagles, 1987). This species prefers early second-growth forest and shrub in abandoned agricultural fields, fencerows, forest edges and openings, and near streams (Eckerle and Thompson, 2001). In Ontario, it is usually found in shrubby tangles and deciduous thickets (Eagles, 1987).	Shrub/early successional habitat did not occur within 120m of the Project Location (Figure 3). **Considered absent from the Project Location.**
Monarch Butterfly	*Danaus plexippus*	S4B, S2N	Special Concern	Special Concern	Records from Wellington County (MNR, pers. comm. 2010)	Much of the concern regarding the status of the eastern populations of monarchs is a result of the loss of habitat in their Mexican wintering grounds. In southern Ontario the Monarch is considered common and exists primarily wherever milkweed and wildflowers exist. This includes abandoned farmland, along roadsides, and other open spaces where these plants grow.	Monarch were observed in relatively low numbers (i.e. less than 5 individuals) within the Study Area on July 21, 2010. Site investigations confirmed that the habitat requirements to support significant populations of Monarch (old-field habitats with abundant milkweed plants) did not occur within the Project Location or the 120 m Zone of Investigation.

S1 – Critically Imperiled
S2 – Imperiled
S3 – Vulnerable
S4 – Apparently secure

Table 2.1: Records Review – Potential Wildlife Species of Conservation Concern

Common Name	Scientific Name	SRANK	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Species Requirements/Limiting Factors	Results of Site Investigation

S#B – Breeding Status
S#N – Non-breeding Status
? – Rank uncertain
END – Endangered
THR – Threatened
SC – Special Concern
NAR – Not At Risk

Table 2.2: Natural Features Identified in, and within 120m of Project Location through Records Review

Natural Feature	In Project Location	Within 120m of Project Location
Wetlands- Provincially Significant	---	Feature 2we
Wetlands- Non-Provincially Significant	---	----
Wetlands- unevaluated	---	Feature 1
ANSIs	---	---
Valleylands	---	---
Woodlands	---	Feature 2wo and 3
Wildlife Habitat—Known seasonal concentration areas, specialized habitats, animal movement corridors, species of conservation concern	---	---

Table 3.1: Springwood Wind Project Site Investigation and Evaluation of Significance Field Survey Record

Survey Date	Survey Type	Completed By	Time	Weather Conditions*
December 22, 2008	Winter Raptor Survey Short-eared Owl Survey	B. Holden J. Pleizier	10:30 – 11:30 16:30 – 17:30	-9°C; wind of 2; 5 to 50% cloud cover; heavy blowing snow. 10 to 50cm of snow on ground
January 19, 2009	Winter Raptor Survey Short-eared Owl Survey	B. Holden J. Pleizier	11:30 – 12:30 17:00 – 18:00	-9°C; wind of 2; 100% cloud cover; no precipitation. 30 to 40cm of snow on ground
February 19, 2009	Winter Raptor Survey	Andrew Taylor Shannon Catton	15:00 – 15:30	-5°C; wind of 3-4; 60% cloud cover; flurries and blowing snow. 3cm of snow on ground
December 15, 2009	Winter Raptor Survey	Nicole Kopysh	16:00 – 16:45	3°C; wind of 1-2; 80% cloud cover; light flurries to snow squalls at 16:45. 5cm of snow on ground Note: Short-eared Owl survey not conducted due to worsening weather conditions.
January 14, 2010	Winter Raptor Survey Short-eared Owl Survey	Nicole Kopysh	16:10 – 17:05 17:05 – 17:45	1°C; wind of 2; 100% cloud cover; no precipitation. 5 to 10 cm of snow in fields
February 28, 2010	Winter Raptor Survey Short-eared Owl Survey	Nicole Kopysh	17:15 – 18:05 18:05 – 18:30	0°C; wind of 1; 100% cloud cover; no precipitation. Rain the previous night.
June 21, 2010	Ecological Land Classification and Vegetation Survey, Woodland Assessment, Wetland Delineation Wildlife survey and habitat assessment	James Leslie	10:00- 17:00	21°C; wind of 2; 40% cloud cover; no precipitation during survey or previous day
July 21, 2010	Wildlife survey and habitat assessment Assessment of habitat suitability for species of conservation concern/endangered and threatened species	Andrew Taylor	09:00- 15:40	27°C; wind of 1; 5% cloud cover; no precipitation during the survey with rain overnight
September 20, 2010	Ecological Land Classification and Vegetation Survey, Woodland Assessement, Wetland Assessment Wildlife survey and habitat assessment	James Leslie	09:30- 18:30	17°C; wind of1- 2; 80% cloud cover; no precipitation during survey or previous day

* Wind conditions expressed using Beaufort Scale:

0 – calm, <2km/hr
1 – light, 2-6 km/hr
2 – light, 7-12 km/hr
3 – moderate, 13-19 km/hr
4 – moderate, 20-30 km/hr
5 – fresh, 31-40 km/hr
6 – strong, 41-51 km/hr

Table 3.2: Summary of Corrections to Records Review			
Feature	**Records Review**	**Correction made as a result of site investigation**	**Report Section Providing Criteria Used in Determination of Correction**
Wetlands	Living Springs PSW within 120m of Wind Project Location No non-provincially significant wetlands occur within 120m of the Project Location Unevaluated wetlands identified in Feature 1	-No changes made to identification or boundaries of PSW within the Project Location -No changes required as a result of the site investigations - No changes required as a result of the site investigations <u>Additional features identified</u>: -none were observed	3.2.2
Valleylands	No valleylands occur in or within 120m of the Project Location	None	3.2.4
Woodlands	Two woodlands were identified within 120m of Project Location (Features 2 and 3)	Feature 3 was not a woodland community <u>Additional features identified:</u> - none were observed	3.2.5
ANSIs	No Earth Science or Life Science ANSIs occur in or within 120m o f the Project Location.	None	3.2.3
Wildlife Habitat: Seasonal Concentration Areas	Winter raptor/Short-eared Owl feeding and roosting	The Project Location does not support winter concentrations of Short-eared Owl or other raptor species.	3.2.6.1
Wildlife Habitat: Rare Vegetation Communities	None identified	None- Project Location does not support this function	3.2.6.3
Wildlife Habitat: Animal Movement Corridors	Candidate SWH restricted to small hedgerows	None	3.2.6.2
Wildlife Habitat: Specialized Habitats	Potential for amphibian breeding habitat	Amphibian breeding habitat provided by Feature 2	3.2.6.3
Wildlife Habitat: Species of Conservation Concern	Potential for habitat of species of conservation concern (rare or low S-ranks) as outlined in Table 2.1	Site investigations confirmed that habitat for species of conservation concern did not occur in or within 120m of the Project Location.	3.2.6.4, Table 2.1 (Appendix B)

Table 3.3: Ecological Land Classification (ELC) Vegetation Types, Springwood Project Location and 120m Zone of Investigation

ELC TYPE	Community Description
Cultural (CU)	
Cultural Woodland (CUW)	
CUW1-3* Mixed Cultural Woodland	Canopy composition varied, but often included trembling aspen, ash, common crabapple, and hawthorn. Canopy density was generally open (35-50% cover), often creating a ground cover composition commonly observed in cultural meadow communities (i.e. forb and graminoid species, variably consisting of awnless brome, Canada goldenrod, bird's-foot trefoil, wild teasel, common milkweed, chicory, ribgrass, asters, Kentucky bluegrass, tufted vetch, and black medic).
Swamp (SW)	
Thicket Swamp (SWT)	
SWT2-2 Willow Mineral Thicket Swamp	Shining willow was abundant in the canopy of this community, with occasional occurrences of silky dogwood and narrow-leaved meadowsweet. Mid-age balsam poplar and white elm were infrequently observed protruding above the shrub canopy. Ground cover density varied with the density of shrubs, but included cut-leaved water horehound, spotted-touch-me-not, fowl-meadow grass, bulbiferous hemlock, and nodding beggar-ticks. Surface water was observed during the June survey, although not during the September survey – soil was instead moist.
SWT2-5 Red-osier Mineral Thicket Swamp	Red-osier dogwood was abundant, with infrequent occurrences of red-panicle dogwood. Ground cover contained an abundance of reed-canary grass, with less frequent observation of dark-green bulrush and tall white aster. No surface water was observed.

*ELC code not listed the First Approximation of ELC for Southern Ontario

Table 3.4 Description and Characterizations of Features found within 120 m of the Springwood Wind Project Location

Feature #	Identification through Records Review	Feature Type As confirmed during Site Investigation	Feature Size (ha)	ELC Community Type	Description of Type	Attributes, Characteristics and Functions
1	Unevaluated Wetland (LIO, 2009; GRCA, 2010)	Wetland	0.1	SWT2-5	Red-osier dogwood was abundant, with infrequent occurrences of red-panicle dogwood. Ground cover contained an abundance of reed-canary grass, with less frequent observations of dark-green bulrush and tall white aster.	-small, isolated red-osier dogwood thicket swamp -no uncommon species composition or structure observed -no surface water observed -agricultural activities occur to feature edge
2	PSW (LIO, 2009)	Wetland	8.4	SWT2-2	Shining willow was abundant in the canopy of the mineral thicket swamp community, with occasional occurrences of silky dogwood and narrow-leaved meadowsweet. Mid-age balsam poplar and white elm were infrequently observed protruding above the shrub canopy. Ground cover density varied with the density of shrubs, but included cut-leaved water horehound, spotted-touch-me-not, fowl-meadow grass, bulbiferous hemlock, and nodding beggar-ticks.	- the thicket swamp community was 0.4 ha -shrub cover was often dense -surface water observed at depths up to 10cm during June and July surveys; the soil was moist with no surface water in September -no tadpoles were observed during June or July surveys -no uncommon species composition or structure observed
	Woodland (LIO, 2009)	Woodland	8	CUW1-3	Canopy composition varied, but often included mid-age trembling aspen, white ash, common crabapple, and hawthorn. Canopy density was generally open, establishing a herbaceous layer dominated by forb and graminoid species.	-no uncommon species composition or structure observed -a young to mid aged stand -it was disturbed by creation and use of ATV trails -it did not provide specialized habitat features such as snags or tree cavities. -does not provide interior habitat - open canopy (30-50%) with an understory

Table 3.4 Description and Characterizations of Features found within 120 m of the Springwood Wind Project Location

Feature #	Identification through Records Review	Feature Type As confirmed during Site Investigation	Feature Size (ha)	ELC Community Type	Description of Type	Attributes, Characteristics and Functions
						reflective of a cultural meadow
3	Woodland (LIO, 2009)	Hedgerow	1.1	HR/CUM1	This was likely a former residential property, with a single row of mature trees on both the north and the south sides, separated by a cultural meadow community. Tree species generally consisted of Norway spruce and Manitoba maple, with an understory of red raspberry. Ground cover contained a mix of forb and graminoid species, such as orchard grass, awnless brome, Kentucky bluegrass, wild carrot, goldenrods, and black medic.	-no uncommon species composition or structure observed -canopy cover was approximately 40% -no amphibian habitat provided

Table 3.5 Winter Raptor and Short-eared Owl Survey Results, Springwood Study Area

Species	December 22, 2008		January 19, 2009		February 19, 2009		December 15, 2009		January 14, 2010		February 28, 2010	
	In Study Area	Outside of Study Area	In Study Area	Outside of Study Area	In Study Area	Outside of Study Area	In Study Area	Outside of Study Area	In Study Area	Outside of Study Area	In Study Area	Outside of Study Area
Red-tailed Hawk	2	2	-	1	-	-	-	-	-	-	-	-
Snowy Owl	-	1	-	-	-	-	-	-	-	-	-	-
Short-eared Owl	-	-	-	-	-	-	-	-	-	-	-	-
Bald Eagle	-	1	-	-	-	-	-	-	-	-	-	-
Rough-legged Hawk	-	-	-	1	-	-	-	-	-	1	-	-
Total	6		2		0		0		1		0	
Km driven	44		30.5		26		12		20.5		12	
Raptors/km	**0.1**		**0.06**		**0**		**0**		**0.05**		**0**	

Table 4.1: Wetland Characteristics and Ecological Functions Assessment for Unevaluated Wetlands

Feature #	Size (ha)	Wetland Type	Site Type	Vegetation Communities	Proximity to other wetlands (approximate)	Interspersion	Flood Attenuation	Open Water Types	Water Quality Improvement (short term)	Water Quality Improvement (long term nutrient trap)	Water Quality Improvement (groundwater discharge)	Shoreline Erosion	Groundwater Recharge	Summary of Hydrology	Rare Species	Significant Features	Fish Habitat
1	0.1	Swamp	Palustrine	ts, gc, ne	300m	25	Headwater; 1 hectare catchment	Type 1	Intermittent inflow; over 50% agricultural landscape; high proportion of live shrubs.	Swamp with <50% coverage of organic soil	No evidence of discharge observed	Not applicable	Palustrine feature with predominantly clay loam soil	Palustrine swamp on clay loam soils with intermittent inflow. Situated in a predominantly agricultural watershed. Data based on surveys, air photo interpretation, and soil mapping*	None known to be present	None known to be present	Absent

Table 5.1: Summary of Potential Impacts and Mitigation Measures

Feature # *(see Figure 4-A and 4-B)*	**Significance**	**Project components sited within 120 m**	**Potential Impacts**	**Mitigation Measures***
1	Provincially Significant Wetland	Access road and collector line: 2.3 m at closest point	Dust generation, sedimentation and erosion during construction Disturbance to vegetation during construction	No development in PSW boundary. Silt barriers (e.g., fencing) will be erected along the edge of Feature 1 Construction contractor to ensure no work occurs outside of the limits of construction Stockpiling of materials will not occur within 30 m of Feature 1
			Contamination through accidental spills during construction or operation	No refuelling or maintenance of vehicles in, or adjacent to the wetland. In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately
			Potential changes to hydrology during construction and operation	Culverts will be added as necessary to the access road. The area between the access road and Feature 1 will be naturalized (seeded) to establish a natural vegetated buffer along the edge of the community. All seeding and /or replanting of these areas will use species native to Ecoregion 6E and will be native to the site and/or surrounding natural features.
2we and 2ah	Provincially Significant Wetland Amphibian Woodland Breeding Habitat	T3: 117 m from blade tip Access Road: 98m at closest point Crane Laydown Area: 85 m at closest point) (*Note the turbine base is 162 m from*	Disturbance to vegetation during construction	No development in PSW boundary. Construction contractor to ensure no work occurs outside of the limits of construction
			Contamination through accidental spills during construction or operation	No refuelling or maintenance of vehicles in, or adjacent to the wetland. In the event of an accidental spill, the MOE Spills Action Centre should be contacted and emergency spill procedures implemented immediately

Table 5.1: Summary of Potential Impacts and Mitigation Measures

Feature # *(see Figure 4-A and 4-B)*	**Significance**	**Project components sited within 120 m**	**Potential Impacts**	**Mitigation Measures***
		the feature and the collector system is 127 m)	Temporary displacement of wildlife during construction/ risk of road mortality to amphibians during operation	During routine operation maintenance vehicle traffic to be restricted primarily to daytime hours. Vehicle speeds to be restricted to 30km/hr or less and speed limit signage posted along access road to T3.
			Potential changes to hydrology during construction and operation	A culvert will be installed beneath the access road to Turbine 4 at the watercourse crossing to maintain hydrological flows

Table 5.2: Construction Monitoring Plan

Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
CONSTRUCTION								
Disturbance to adjacent vegetation	Work to be restricted to construction envelope	No work beyond construction area	Visual inspections to ensure works stay within construction area	Feature 1 and 2	Weekly	n/a	Monthly	Immediately stop work in off-limit areas
Contamination of natural heritage features through accidental spill	Proper storage of materials off-site in storage containers Adherence to Emergency Response Plan Contact MOE Spills Action Centre	Minimize likelihood of spill Contain spill material	Visual inspections to ensure proper storage	Storage areas	Weekly	n/a	Monthly	Follow-up monitoring /inspections in the event of an accidental spill/leak Remedial actions may be required in the event monitoring indicates a negative effect to natural features